Mini R.O.V. Submersible

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TOOLS:

- (Optional) Helping hands tool with magnifier (1)
- (Optional) Wire cutter/stripper (1)
- Hot Glue gun & hot glue (1)
- Soldering iron (1)
- Water (Bath Tub) (1)

PARTS:

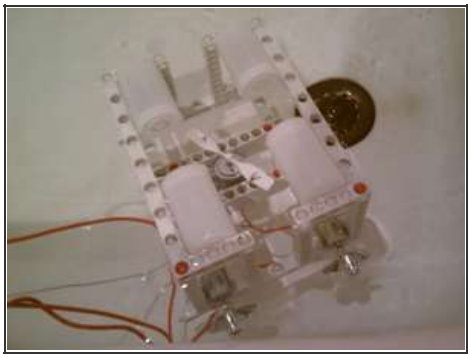
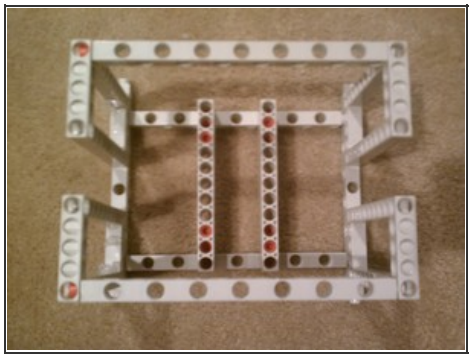
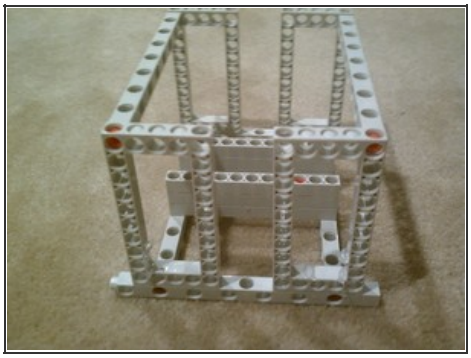
- Push Button, 33mm (1)
- DC motor (3)
- Frame pieces (1)
- 9V battery clip (1)
- Battery, 9V (1)
- Empty Film Canisters (4)
- Propellers (3)
- Solder (1)

SUMMARY

This is a great, easy project! This project is also a first prize winner in the 2012 Instructables Robot Contest!

This little submersible uses 3 DC motors and a nine-volt battery. It controls the three motors with three buttons. Its frame is built from lego-type pieces. It is very simple and great for beginners, although it does require a soldering iron.

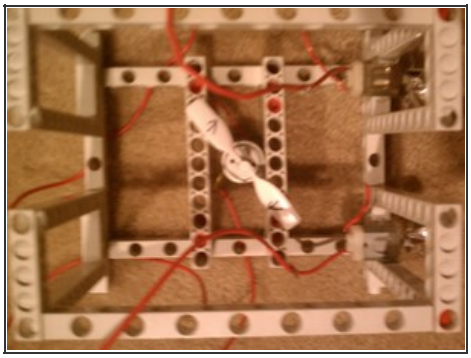
Step 1 — Mini R.O.V. Submersible

- Your frame doesn't have to be exactly like the picture, although it should be similar.
- It must have room to evenly spread out four film canisters on the top.
- It also needs a space on the bottom in the center as shown in the pictures.
- If your frame is not very sturdy, you can add some hot glue.
- Lastly, it needs two spaces on the back of the bottom for the rear motors. Use the pictures for reference.

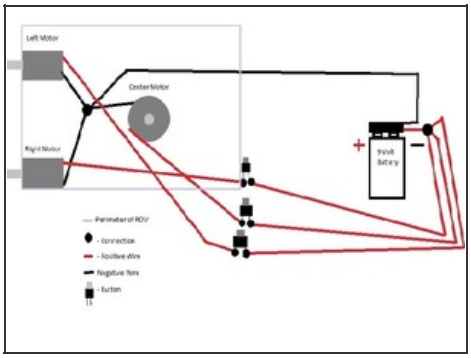
Step 2

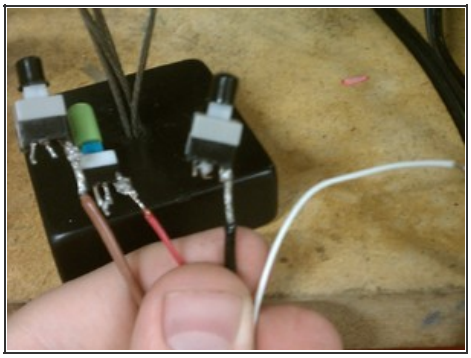




- First, using your hot glue gun, glue the propellers to all three of the motors.
- Next, take a 9V battery and touch the leads from the motor to the positive and negative terminals of the battery. When you do this, check to feel if the propeller is blowing air. If it is not, reverse the polarity.
- Once you have figured out which leads on the motor go to positive or negative, mark them with a + or -.
- Now add very long lengths of wire to the leads of the motors you labeled as positive. On the negative side or "ground", solder on a 4-inch length of wire.
- Now, hot glue the three motors in place according to the pictures.

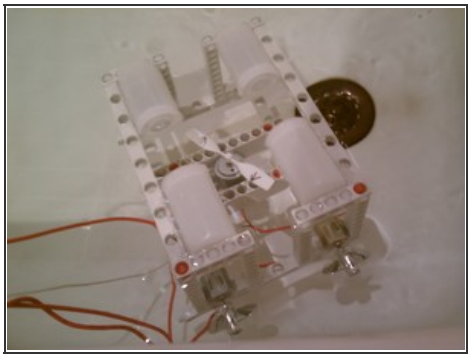
Step 3

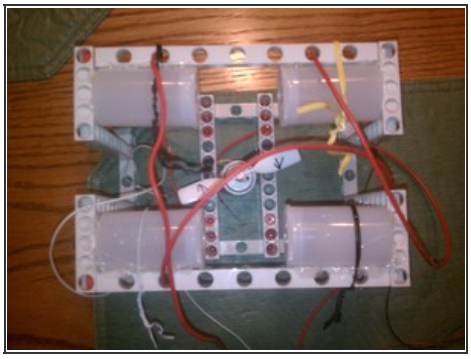


- Now take all three "ground" wires from the motors and solder them all together.
- Now solder a very long wire (the same length as the positive wires) to the three ground wires you soldered together.
- On the battery clip, notice that the red wire is the positive wire and the black is negative. On the positive side, solder three wires to the one wire. Make them about 5 inches long.
- On the negative side of the battery clip, solder the long wire from the negative motor wires.
- Next, solder each positive wire from the motors to one lead of a pushbutton. On the other lead, solder one of the wires going to the positive side of the battery clip. See the wiring diagram for help.
- To make sure it is working, connect the battery to the clip and press each of the buttons in turn. Make sure that every motor is spinning and is blowing air.

Step 4





- Now, hot glue on the film canisters to the top.
- Put it in the water, at first just to test the weight distribution. If the back is too heavy (most likely) put weights (quarters work well) in the front canisters.
- Finally, you are done! Put it in the bathtub and have fun!

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